Sound Level Meter

Educational technology comes in all forms: special grade and attendance software, student response systems ("clickers"), and mobile device apps. As the newest member of the electrical engineering team at ABC Educational Technologies, you have been tasked with designing a sound level meter for use in the classroom. Teachers have expressed an interest in a device that would monitor the sound level in their classrooms for them, so they can concentrate on helping individual students. Such a meter would allow teachers to set a threshold noise level, read the current sound level, and then indicate to students that they are getting too noisy.

Your marketing team has conducted focus groups with a variety of teachers. Results show they want to have a prominent visual display of the current sound level. Additionally, they want some sort of eye-catching feedback when the sound level is too loud.

Your job is to create a prototype of a sound level meter using Vernier sensors, a LabQuest interface, Logger *Pro* (or stand-alone LabQuest 2), and a variety of output devices shown in the Materials list.

MATERIALS

LabQuest 2 or
LabQuest interface with computer running Logger *Pro* software
LabQuest power supply
Digital Control Unit (DCU)
Sound Level Meter

Output Devices
DC buzzer
DC/120 mA lamp
DC fan
DC motor
DC vibrating motor
green LED (with resistor)
red LED (with resistor)

Construction Materials
duct tape
cardboard
felt sheets
colored markers

DESIGN AND CONSTRUCTION TIPS

- Following the Engineering Process will save you time and energy! First, consider the design requirements and constraints, and then start brainstorming ideas. Using an Engineering Design Sheet can guide you through the process.
- You may need to do some research or sound level testing to determine what teachers think is an acceptable level of noise in a classroom.
- Using a LabQuest 2 or Logger *Pro*, the DCU can control up to three different output lines independently. Each line can be connected to a different output device.